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Year: 2011

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**The impact of innovation: comments on Uwe Cantner and Wolfgang Kerber  
(Competition policy and evolutionary and innovation economics)**

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Posted at the Zurich Open Repository and Archive, University of Zurich  
ZORA URL: <https://doi.org/10.5167/uzh-53714>  
Book Section

Originally published at:

Heinemann, Andreas (2011). The impact of innovation: comments on Uwe Cantner and Wolfgang Kerber (Competition policy and evolutionary and innovation economics). In: Drexler, Josef; et al. Competition policy and the economic approach: foundations and limitations. Cheltenham, UK: Edward Elgar, 202-213.

## 10. The impact of innovation – comments on Uwe Cantner and Wolfgang Kerber

**Andreas Heinemann**

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### 1. PRELIMINARY REMARKS

Evolutionary economics is a school of economic thinking which transfers basic concepts of biology to socio-cultural phenomena. Keywords are variation and selection: the competitive process is one of trial and error in which different strategies compete with each other. Many new ideas are tried and tested on markets. Markets decide on selection: only some of these ideas are successful; others are sorted out. Nobody can tell beforehand which ideas will survive. The evolutionary approach is genuinely dynamic: the focus is on the economic development in time, and not so much on the results in a given moment. Prominent precursors of the evolutionary school are Schumpeter and Hayek. Schumpeter criticized the ideal of perfect competition and underlined the role of entrepreneurs in the process of creative destruction.<sup>1</sup> Hayek explained the success of economic strategies, routines and institutions as the result of a discovery procedure and not of rational construction.

In our context, the contribution of evolutionary economics to competition law is to be scrutinized. Whereas Uwe Cantner describes the general framework, Wolfgang Kerber makes specific policy proposals. In section 2 of these comments, the central subject will be discussed which is the impact of evolutionary thinking on merger control. In section 3, the consequences for Articles 101 and 102 TFEU will be explored. Before drawing final conclusions, the consistency of evolutionary thinking with ‘interventionist’ competition policy has to be investigated.

## 2. THE IMPACT OF EVOLUTIONARY THINKING ON MERGER CONTROL: MAINTAINING A SUFFICIENT NUMBER OF SOURCES OF INNOVATION?

### 2.1. Effects of a Merger on Innovation

The contributions show that, for the purpose of merger control, innovation may be used in two contradictory senses: on the one hand, a merger may lead to efficiency gains in the sphere of R&D, thus providing an argument in favour of the merger. Efficiency gains in this context may for instance follow from economies of scale and scope, the combination of complementary resources or the avoidance of cost duplication. On the other hand, the merger may restrict competition in R&D which may be negative for long-term consumer welfare.<sup>2</sup>

Cantner is sceptical about 'the hypothesis that large size or concentrated markets lead to higher innovative activities'. He points to the OACK approach which underlines the importance of other factors, like for example technological opportunities and the conditions for the appropriation of innovation. Markets are considered as places for testing new ideas in a trial-and-error process. Kerber adds 'that it might be an important task of competition policy to ensure a multiplicity and diversity of independently innovating firms since they are sources searching for new problem solutions and safeguarding the effectiveness of competition as a process of parallel experimentation and mutual learning'. This leads to another analogy to biology, i.e. to the merits of biodiversity. Kerber explores the possibilities of a diversity test.<sup>3</sup> Should competition law guarantee a certain multiplicity and diversity of firms which independently search for new solutions? Is it possible to determine an optimal number of parallel experimenting firms?

### 2.2. The '4-plus-test' as a Proxy for the Effects on Innovation?

Kerber makes reference to the '4-plus-test' which stems from the US Licensing Guidelines (US Department of Justice, Federal Trade Commission 1995: para. 4.3) and basically says: there are normally no competitive concerns if there are at least four competing, i.e. substitutable, technologies. The European Commission has integrated the '4-plus-test' into the Guidelines on technology transfer agreements (European Commission 2004a, TOT Guidelines). In the context of restrictive licensing agreements, the '4-plus-test' serves as a kind of 'soft' safe harbour. According to the TOT Guidelines (n. 131), 'outside the area of hardcore

restrictions [Article 101 TFEU] is unlikely to be infringed where there are four or more independently controlled technologies in addition to the technologies controlled by the parties to the agreement that may be substitutable for the licensed technology at a comparable cost to the user’.

The question arises whether this test could be transferred to merger control in order to give more guidance as regards the impact of a merger on innovation. An argument in favour of such an adoption is the relationship between Article 101 TFEU and merger control: the conditions for the prohibition of a merger (or for the necessity of commitments by the merging entities) are higher than the requirements of Article 101 TFEU: whereas a merger can be prohibited only if it significantly impedes effective competition (for example as a result of the creation or strengthening of a dominant position), restrictive agreements are illegal if they have as their object or effect an appreciable restriction of competition within the common market and if they are not justified by reasons of economic efficiency in the sense of Article 101(3) TFEU. One could argue that if the ‘4-plus-test’ grants a safe harbour to restrictive agreements it should all the more favour a concentration since the prohibition of a merger requires stricter conditions.

On the other hand, in the field of licensing agreements, characterized by contracts containing numerous standardized clauses, the need for schematic solutions is much higher than in the case of merger control. In merger cases, the impact on innovation is case-specific. Moreover, the effect of mergers on innovation is only one aspect among many and should not predetermine the outcome of an overall analysis. Therefore, in my view, the ‘4-plus-test’ should not be given a decisive role in the sense of a safe harbour. Rather the general criteria of merger analysis should apply.

### 2.3. Innovation Considerations in the EC Merger Regulation (ECMR)

These general criteria provide a framework which is flexible enough to take into account the insights of evolutionary economics – and, actually, they are perfectly reflected in European merger control. According to Article 2(1)(b) ECMR, the European Commission has to take into account *inter alia* ‘the development of technical and economic progress provided that it is to the consumers’ advantage and does not form an obstacle to competition’. On the one hand, according to the Horizontal Merger Guidelines (European Commission 2004b: para. 81), consumers may ‘benefit from new or improved products or services, for instance those resulting from efficiency gains in the sphere of R&D and innovation.’ On the other hand, the joining of innovative power must not constitute an obstacle to effective competition.

When assessing the degree of competitive pressure before and after the merger, actual and potential competition has to be analyzed. Regarding actual competition, market shares and concentration levels have to be determined. For concentration levels, the European Commission uses the Herfindahl–Hirschman Index (HHI), which is the sum of the squares of the individual market shares of all undertakings active on a certain market. The change in HHI due to the merger ('Delta HHI') is of particular relevance. In the Horizontal Merger Guidelines, the Commission has determined critical thresholds of HHI and Delta HHI. These values do not provide a presumption of dominance, but work as safe harbours. Below these thresholds, competitive concerns are unlikely (Horizontal Merger Guidelines: paras 19–21). However, low concentration levels and deltas cannot be relied upon if 'one or more merging parties are important innovators in ways not reflected in market shares' (Horizontal Merger Guidelines: para. 20 lit. b).

As a result, the legal framework provides for sufficient space for long-term innovation-oriented thinking. However, better use should be made of it in the future. The maintenance of effective competition in innovation should become a recognized feature of merger analysis. A merger should undergo particularly careful scrutiny if important innovators are involved. Thus, it would be guaranteed that the prominent role of 'parallel experimentation' is sufficiently respected. Therefore, I agree with Cantner who cautions against static thinking based on an isolated application of the HHI.

#### 2.4. The Concept of Innovation Markets

Closely linked to these reflections is the discussion on the existence of innovation markets. Are there separate innovation markets which are upstream to technology and product markets? According to the definition in the US Licensing Guidelines (n. 3.2.3), an 'innovation market consists of the research and development directed to particular new or improved goods or processes, and the close substitutes for that research and development'. The concept of innovation markets is highly relevant for our context. If this approach is followed no detour over technology or product markets has to be made, but it is possible directly to discern the impact on these innovation markets.

Although the concept of innovation markets is related to a diversity test, Kerber criticizes the lack of theoretical foundation and application problems of the innovation market concept and prefers the evolutionary model of competition as a process of experimentation. This view backs the lessons from competition law experience. It is very difficult for

competition authorities to identify parallel R&D and to assess the prospect of success of these activities (Ullrich 1999: 279 *et seq.*).<sup>4</sup> Therefore, innovation considerations should rather be integrated into the analysis of the merger's effect on product and technology markets within the concept of potential competition.

### 3. ARTICLES 101 AND 102 TFEU AND THE APPLICATION OF COMPETITION LAW TO INTELLECTUAL PROPERTY RIGHTS (IPRS)

#### 3.1. The Significance of Evolutionary Thinking for the Competition Rules

Evolutionary economics seem to be used to show that one of the tasks of merger control is maintaining a minimum number of actors in order to maintain a sufficient degree of parallel experimentation. The question has to be asked if the contribution of evolutionary economics is restricted to the area of merger control or if the concept may be used in the context of Articles 101 and 102 TFEU as well. It has already been noted that the '4-plus-test' is used as a safe harbour when assessing licensing agreements. As regards the relationship between merger control and competition rules, it is often said that merger control is more future-oriented than the competition rules are, since Articles 101 and 102 TFEU constitute an *ex post* control.

In my view, this starting point seems questionable, not only but most notably in the field of innovation-oriented activities like licensing contracts or the application of Article 102 TFEU to the IT sector. One of the standard accusations against competition law in this field is that short- or medium-term effects are preferred to a long-term perspective taking into account the prospective consequences for creativity and innovation. Whenever competition law is applied to IPRs, the critique says that only static competition by imitation is enhanced to the prejudice of dynamic competition by innovation. It is of utmost importance for competition law to show that this critique is unfounded. Therefore, long-term thinking including effects on innovation must not be restricted to merger control but extended to the general competition rules. This may be illustrated by two cases, the Spanish *Glaxo* case as an example of Article 101 TFEU, and the *Microsoft* case as an Article 102 TFEU paradigm.

##### 3.1.1. Dual pricing: the spanish Glaxo case

The *Glaxo* cases concern practices of a pharmaceutical producer which aim at reducing or eliminating parallel imports. In the Spanish case, the

European Commission prohibited a system of dual pricing according to which dealers in Spain had to pay a higher price for goods going to be exported than for goods that were to be sold in the Spanish market.<sup>5</sup> The ECJ confirmed the decision of the CFI which (partly) annulled the Commission's decision.<sup>6</sup> For our context, the innovation aspect is relevant. According to the ECJ, the Commission did not sufficiently examine the question whether dual pricing improves innovation. Therefore, the Commission has to re-examine the application of Article 101(3) TFEU (ex-Article 81(3) EC).<sup>7</sup>

I agree that aspects of innovation should play a prominent role in the context of Article 101(3) TFEU. If a restriction of competition is necessary to promote technical or economic progress, the restriction is justified if the further conditions of Article 101(3) TFEU are met. Therefore, if 'private export taxes' are indispensable to promoting innovations in the pharmaceutical sector and if consumers receive a fair share of the resulting benefit etc., the pricing scheme is justified. The European Commission has analyzed this question and has come to the result that obstacles to parallel imports are not a suitable means to promote R&D.<sup>8</sup> The ECJ criticized the Commission's analysis as insufficient. In my view, the Commission's reasoning is detailed enough and convincing. The ECJ should respect its own starting point that complex economic assessments are subject only to a confined control.<sup>9</sup> In our context the fact is important that the impact of certain practices on innovation should play a major role not only in merger control but also in Article 101 TFEU cases.

### 3.1.2. An example of Article 102 TFEU: the Microsoft case

As is well known, the European Commission fined Microsoft for the abuse of a dominant position.<sup>10</sup> According to the Commission's findings, confirmed by the European Court of First Instance,<sup>11</sup> Microsoft extended the dominant position in the market for operating systems into the market for work group server operating systems by establishing 'privileged connections between its dominant client PC operating system and its work group server operating system'.<sup>12</sup> Moreover, the tying of Windows and the Windows Media Player (WMP) was found to be an abuse since the ubiquitous presence of WMP 'creates disincentives for OEMs to ship third party streaming media players pre-installed on their PCs, and harms competition in the market for streaming media players'.<sup>13</sup>

Aspects of innovation play a prominent role in this case. Microsoft had put forward the argument that granting access to its technology would destroy the incentives to innovate in the future. The European Commission and the CFI rejected this allegation as too 'vague, general and theoretical'.<sup>14</sup> Microsoft had not specified the argument. Whereas the

burden of proof regarding the existence of a dominant position and of an abuse is on the competition authority, the dominant enterprise has 'to raise any plea of objective justification and to support it with arguments and evidence'.<sup>15</sup>

It follows from the *Microsoft* case that it is not sufficient to point to the reputedly negative consequences of competition law's application for innovation, but it has to be shown what exactly is meant by this causal relationship. Moreover, the competition authority still has the chance 'to show that the arguments and evidence relied on by the undertaking cannot prevail and, accordingly, that the justification put forward cannot be accepted'.<sup>16</sup>

In this context, it is important to note that the application of competition law may increase the incentives to innovate not only of competitors but also of the dominant firm itself. It has to develop stronger innovative efforts if it is exposed to competition at least in neighbouring markets. The same is true for the dominated market itself: the incumbent will be much more creative if its monopoly (very often based on network effects) is menaced by substitution, at least in the long run.

In sum, it would not be correct to say that the effects on innovation are not taken into account by the European Commission. The contrary is the case: the Commission and the CFI carefully assess the effects on incentives to innovate when establishing an abuse in the sense of Article 102 TFEU. However, there is a problem regarding innovation when it comes to the legal consequences of the infringement. The European Commission (again confirmed by the CFI) imposed on Microsoft the obligation to offer a Windows version in Europe without the media player. Not to mention the fact that this injunction was ineffective since the full version was sold at the same price as the version without media player; this remedy restricts technological development. It seems to mean that whenever the network effect leads to the ubiquity of a certain product, the dominant firm is no longer free to integrate new features into the system. Such a far-reaching consequence would indeed constitute an obstacle to further innovations. This path should not be followed. Aspects of innovation should be taken into account not only when establishing an abuse but also when determining remedies. What is needed are 'smart sanctions'. Barriers to entry should be lowered for example by imposing a 'must carry' duty committing the dominant enterprise to distribute the competing products together with its own.

It is interesting to note that in the browser proceedings against Microsoft, the European Commission seems to say goodbye to unbundling obligations. The Commission criticized Microsoft for planning a Windows version without a browser and suggested a 'ballot screen' presenting different browsers to end-users, thus increasing consumer choice.<sup>17</sup>



This approach is to be welcomed: Thus, aspects of innovation are taken into account not only when interpreting the abuse prohibition but also when it comes to the elaboration of appropriate remedies.

### 3.2. The Article 102 TFEU Paper of the Commission

In its Guidance on Article 102 TFEU (ex-Article 82 EC) enforcement priorities,<sup>18</sup> the European Commission has eventually renounced separate sections on the refusal to licence IPRs and the refusal to supply interface information.<sup>19</sup> Instead, these practices are integrated in the general reflections on refusal to supply.<sup>20</sup> The effects of competition law application on incentives to innovate are reflected.<sup>21</sup> The result does not entail a complete abstention from competition law intervention but it subjects the application of Article 102 TFEU to detailed conditions. These conditions are directly borrowed from the ECJ case law in *Magill*, *IMS Health*, *Microsoft* and others. The section on tying and bundling,<sup>22</sup> however, does not contain reflections on the influence of tying prohibitions on incentives to innovate. Thus, the opportunity to correct the weak point of the *Microsoft* decision is missed.

### 3.3. The Scope of IPRs

Not only is the application of competition law, but also the definition of IPRs is of great influence for incentives to innovate. Cantner mentions that ‘weak intellectual property rights or less complex (and easier to grasp) new knowledge offer more opportunities for potential entrants to enter’. This leads to the question to what extent evolutionary economics should be applied not only to the interpretation of competition law but also to the design and the scope of IPRs. In my view, similar questions arise in this context. The scope of IPRs has a strong influence on the process of parallel experimentation, variation and selection, by influencing the competitors’ radius of operation. The discussion on the relevance of economic insights for the legal system should not be restricted to competition law, but extended to the field of intellectual property protection. Some problems of competition law – albeit certainly not all of them – could be avoided if legislators designing IPR regimes and lawyers interpreting IPRs took the competitive process into account.

### 3.4. Summary

The focus of evolutionary economics applied to competition law seems to be on merger control. As we stand at the beginning of testing the suitability

of evolutionary thinking in competition policy, this seems acceptable as a starting point. Yet, there is no deeper reason for restricting evolutionary economics to merger control. On the contrary, the long-term perspective of the evolutionary concept could contribute to the entire field of competition law by invalidating an argument frequently put forward, namely that competition law turns a blind eye to long-term effects on innovation. Evolutionary economics may be helpful in order to strengthen the long-term perspective in applying Articles 101 and 102 TFEU. The most recent *Microsoft* case in Europe (dealing with the integration of the browser into the operating system) shows that the European Commission is becoming more sensitive to the effects on innovation, although this aspect is not yet fully developed in the Article 102 TFEU guidance paper.

#### 4. THE CONSISTENCY OF EVOLUTIONARY THINKING WITH 'INTERVENTIONIST' COMPETITION POLICY

One of the most surprising results of the application of evolutionary economics to the field of competition policy is the following paradox: although Hayek is close to Chicago School reasoning which is opposed to the Structure-Conduct-Performance (SCP) paradigm of the Harvard School, evolutionary thinking and the view of competition as a discovery procedure can apparently be used to promote 'structural' concepts like the diversity test. This can best be illustrated by Kerber's suggestion 'to ensure a multiplicity and diversity of independently innovating firms since they are sources searching for new problem solutions and safeguarding the effectiveness of competition as a process of parallel experimentation and mutual learning'.

At first sight, there seems to be the following contradiction: competition policy does not completely rely on spontaneous variations and their success in the market. Competition policy tends to guarantee the framework and not to leave everything to the discretion of market participants. Maintaining a minimum number of firms as independent sources of searching solutions may be an important task of competition policy. However, in my view, this goal is only compatible with evolutionary thinking if this is interpreted in a conditional way (Vanberg 1994: 29 *et seq.*). Spontaneous evolution should be relied upon only if this process is governed by certain restrictions. Competition law is part of the legal framework that market participants have to respect. Rules should be designed in a way that guarantees the competitive process in the future. If evolutionary thinking is restricted in this sense to the economic interactions within

a certain framework, the tension between evolutionary economics and 'interventionist' competition policy can be solved.

As a result, this means that evolutionary thinking is suitable to explain the competitive process, but does not serve as a comprehensive rationale for competition policy. It is the very goal of competition policy to limit the evolutionary process by giving and enforcing rules for market participants. Therefore, there are trials and errors that should not be tested. The analogy to biology has its limits, as always in a socio-cultural context.

## 5. CONCLUSION

Evolutionary economics brings a new aspect to competition law: used to a greater or lesser extent to take into account the insights of Industrial Organization with its focus on game theory and price effects, a broader perspective is developed. It is the long temporal horizon which is characteristic for evolutionary economics. The *more economic approach* is criticized for its short-term perspective. Instead, the effects on innovation as a key component of evolution take centre stage.

It is important to integrate long-term reflections into competition law analysis. However, the long-term orientation may at the same time constitute an obstacle to the application of competition law. There is a practical need not to rely on developments which are too remote in the future. This is the reason the European Commission provides for time-limits in its guidelines. According to the TOT Guidelines (para. 138), entry barriers are low if market entry by potential competitors is expected within one or two years. The Horizontal Merger Guidelines consider market entry to be timely if it occurs within two years (para. 74).

Evolutionary economics seems to give a structural response to the long-term challenge. As it is not possible to make reliable predictions on the evolution of innovation, the conditions for innovative efforts come to the fore. Cantner and Kerber are rather sceptical as regards the innovation-enhancing effect of concentration. Instead, the importance of parallel experimentation and the existence of competing innovators are underlined. This leads to recommendations which would rather be associated with Harvard School thinking than with Schumpeter and Hayek. As a result, it is not dynamic efficiency which competition law should directly be aiming at but the maintenance of market structures which favour creativity.

Evolutionary economics puts special emphasis on the dynamic dimension of competition policy and moves the effects on innovation from the periphery to the centre. At the same time, the analysis is refined: the

one-sided perception of competition law as a danger to innovation is overcome. The negative effects of mergers and restrictive behaviour on the generation of knowledge get the same attention. Thus, evolutionary economics helps to strengthen the basis for long-term thinking in competition law. Although the way towards workable concepts is still long, the evolutionary approach seems promising and should be pursued.

## NOTES

1. For a more detailed description see Cantner, ch. 8 this volume: whereas the young Schumpeter considered small firms to be the main actors of innovation, he later saw large firms as the main drivers of technological change.
2. Mergers do not necessarily restrict the number of research paths since parallel experimentation may continue within the merged entity. However, it is more probable for parallel experimentation to be continued if firms do not merge but create R&D joint ventures, see the analysis of Kerber in ch. 3.3.
3. For further details Kerber refers to the inquiry of Linge (2008).
4. Even in the US, the concept of innovation markets is used rather reluctantly; see for example the statement of then FTC Chairman T. Muris in Federal Trade Commission of 13 January 2004, *Genzyme/Novazyme*, [www.ftc.gov/os/2004/01/murisgenzymestmt.pdf](http://www.ftc.gov/os/2004/01/murisgenzymestmt.pdf), pp. 2 *et seq.*  
It is worth noting that in the *Genzyme* case, the Commissioners were in disagreement about the relationship of concentration and innovation. The majority rejected any presumptions on the impact of concentration on innovation and pointed to the necessity of a case-by-case inquiry. The minority opinion argues in support of such a presumption. See the analysis of Katz and Shelanski (2007) at IX B. Katz and Shelanski recommend a presumption of harm in the case of mergers to monopoly.
5. European Commission of 8 May 2001, Decision 2001/791/EG – *Glaxo Wellcome*, OJ of 17 November 2001, L 302/1.
6. Cases C–501/06, *GlaxoSmithKline* [2009] ECR I-9291.
7. *Ibid.*
8. European Commission (*supra* note 5), para. 153 *et seq.*
9. ECJ (*supra* note 6).
10. European Commission of 24 March 2004, Case COMP/C-3/37.792 – *Microsoft*, <http://ec.europa.eu/competition/antitrust/cases/decisions/37792/en.pdf>.
11. CFI Case T–201/04, *Microsoft v. Commission*, [2007] ECR II-3601.
12. European Commission (*supra* note 10), para. 1064.
13. *Ibid.*, para. 1066.
14. *Microsoft* – CFI (*supra* note 11), para. 698.
15. *Ibid.*
16. *Ibid.*
17. European Commission of 16 December 2009, Case COMP/C-3/39.530 – *Microsoft*, [http://ec.europa.eu/competition/antitrust/cases/decisions/39530/final\\_decision\\_en.pdf](http://ec.europa.eu/competition/antitrust/cases/decisions/39530/final_decision_en.pdf).
18. European Commission, *Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Enterprises*, OJ of 24 February 2009, C 45/7.
19. Initially, such sections were part of the discussion paper of 2005: see European Commission, *DG Competition Discussion Paper on the Application of Article 82 of the Treaty to Exclusionary Practices*, December 2005, sections 9.2.2.6 and 9.2.3, available at <http://ec.europa.eu/competition/antitrust/art82/discpaper2005.pdf>.
20. European Commission, *Article 82 of the EC Treaty* (*supra* note 18), para. 78.

21. See paras 75, 82, 87, 89–90 of the Guidance Paper (*supra* note 18).
22. *Ibid.*, para. 47 *et seq.*

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## PART IV

### Competition policy and behavioural and experimental economics

